

ROOF RIDGE FLASHING

This is a nationalization of PCT/NZ2004/000224 filed 17 September 2004 and published in English.

5 **FIELD OF THE INVENTION**

The present invention relates to a flashing suitable for flashing, for example but not limited to, the roof of a building.

BACKGROUND

10 Many forms of flashing are known. Traditionally flashings were formed from sheets of lead and were conformed on site to shapes required. Lead is both heavy and expensive and requires a lot of labour. It is also difficult to have it satisfactorily retain a painted surface.

Other methods of flashing a roof, such as a ridge of a roof with ridge caps
15 or tiles requires pointing or rendering in the form of cement or mortar, which over time breaks down and cannot move with the expansion and contraction of the building. The application and maintenance of such constructions is time consuming and expensive and may account for a large percentage cost of the final roof structure.

20 The present invention recognises the prospect of providing lightweight roof flashings that are versatile as to their use (even though they may be pre-shaped for convenience) and demand little in the way of skill in their use. It is to this that the present invention is directed.

I have determined that an effective conformable region of a flashing
25 structure can be prepared by associating a conformable yet shape retaining layer having a mesh, perforate or other "open" character (e.g.; partially expanded sheet aluminium of a "mesh" character) using an appropriate adhesive bonding with a flexible weathering layer and thereafter relying on a tack retaining adhesive surface (whether simply "show through" adhesive or adhesive in addition) for
30 associating such a conformable region to a surface of a region to be flashed.

There are instances however where it is desirable to have part of a roof flashing underlying a ridge cap, tile or member. Nevertheless there is a need, since it is the transition of a roof (whether a ridge, valley or other transition) that is to be flashed, for there to be continuity in the weathering surface. Other instances exist where no ridge cap, tile or member is utilised and the flashing therefore forms the complete ridgeline.

The object of the present invention is to provide a roof flashing for a ridge, valley or otherwise that goes someway to meeting the above desiderata, or at least provides the public with a useful choice.

BRIEF DESCRIPTION OF THE INVENTION

In one aspect the present invention may be said to broadly consist in a **roof flashing** for or suitable for flashing a "ridgeline", said flashing comprising or including:

- a) a "ridge" overlying region to overlie the actual or phantom "ridge" to be flashed,
- b) a first flanking region extending from the ridge overlying region, and
- c) a second flanking region extending from the ridge overlying region, **wherein** the ridge overlying region is conformed to a three dimensional form and/or is conformable to a three dimensional form,

and wherein the first and second flanking regions extend from the ridge overlying region so as to flank the actual or phantom "ridge" to be flashed by the flashing,

- and wherein** the flashing is at least in part laminated so as to have a weathering surface of one or more material(s) and having in at least one of the flanking regions at least a partial underlying support of the weathering material(s).

In one embodiment each of the flanking regions has at least a partial underlying support of the weathering material(s).

Preferably said first and second flanking regions depend from a first zone of articulation immediately adjacent said ridge overlying region.

Preferably at least one of the flanking regions is at least conformed to a three dimensional form, is conformable to a retained or retainable three dimensional form or has a distal extremity greater in extent than the proximal extent of that flanking region to said ridge overlying region.

Preferably the roof flashing includes preferably by removal of a release sheet or release sheets to reveal an adhesive or other tack providing surface to allow at least part of at least one of the flanking regions to be adhesively attached to a support surface e.g. of a roofing material to be flashed.

In some options one or more materials e.g. as a laminate, provide the ridge overlying region whilst in other forms the ridge overlying region can be at least in part, primarily or wholly of the one or more material(s) providing a weathering surface notwithstanding the fact that the flashing is at least in part laminated (e.g. whether solely in one or both of the flanking regions or otherwise).

Preferably the distal ends of one or each of said first and second flanking regions distal from said "ridge" overlying region is conformed into a three dimensional region to allow (by conformity or material thus made available) association with undulating or otherwise three dimensional roofing materials, to be flashed, flanking said "ridge" or "ridgeline".

Preferably said three dimensional region is at least in part held in its three dimensional form by said partial underlying support.

Preferably said partial underlying support is a conformable yet shape retaining three dimensionally conformed material.

Preferably said three dimensionally conformed material underlies said weathering layer.

Preferably there is sufficient tack retaining adhesive on the non-weathering side of at least part of one or both said first and second flanking regions and/or said three dimensionally to associate said flanking regions to said roofing materials.

Preferably said tack retaining adhesive lies between said weathering layer and said dimensionally conformed material.

Alternatively said dimensionally conformed material lies between said weathering layer and said tack retaining adhesive.

5 Preferably said three dimensionally conformed material is a metal. Said metal can be sheet aluminium (and optionally may be wholly or in part be able to be expanded).

In one embodiment said three dimensional region is configured so as to exhibit a substantially sinusoidal section when being viewed in section towards
10 said distal ends.

Preferably said three dimensionally conformed material is a perforate or expanded sheet of a suitable metal.

Preferably said three dimensionally conformed material is only partially expanded prior to application of said flashing.

15 Preferably said three dimensional region can expand and contract in directions parallel and transverse to said "ridgeline" which said flashing is to flash to further engage and conform to said roofing materials.

Preferably a suitable natural or synthetic rubber material or plastics material provides said exterior flexible weathering surface.

20 Preferably said suitable natural or synthetic rubber material or plastics material is selected from the Desmopan® range of thermoplastic polyurethane materials.

Preferably said "ridge" overlying region is conformed, as part of said lamination to a substantially rigid section underlying said weathering layer.

25 Preferably said substantially rigid section is of substantially complimentary configuration conforming to said "ridge" beam or beams, or structure defining said "ridgeline".

Preferably said flashing has differing degrees of flexibility of the lamination over its cross section.

30 Preferably said differing degree of flexibility is at least in part due to

differing flexibility of said weathering later.

Alternatively said differing degree of flexibility of said weathering layer is due to differing thickness and/or differing material properties (such as density, flexural strength, Shore hardness etc) of said weathering layer.

5 Preferably said weathering layer over said rigid section is between 100 and 600 microns thick.

 Preferably said weathering layer over said rigid section is 200 microns thick.

 Preferably said three dimensionally conformed material is mould
10 embedded at least in part in another material, said another material being flexible but not necessarily being said flexible material(s) providing the exterior weathering surface.

 Preferably wherein a release sheet is associated with said tack retaining adhesive.

15 Preferably said "ridge" overlying region includes a number of openings therethrough to allow penetrative fixers to affix the same to a "ridge" beam or beams.

 Preferably said flashing is to underlie a ridge cap or ridge tile.

 Preferably said flashing has, at said distal ends further extensions ("flank
20 returns") which have a third zone of articulation from said distal end to be articulated to engage with the under side of said ridge capping(s) or tile(s) to form a further water and weather proofing of said ridge.

 Preferably said zone of articulation runs parallel to said ridge overlying region.

25 Preferably said flank returns are separable into portions by lines of separation running substantially perpendicular to said line of articulation.

 Preferably said flank returns further have zones of adhesion to engage with the underside of said ridge capping(s) or tile(s).

 Alternatively said flashing may form the ridgeline without reliance upon a
30 ridge cap or ridge tile.

Preferably said flashing is coloured to match the roofing material or tiles to which it is applied.

Alternatively said flashing may be coloured in a form as desired by the end user.

5 In a second aspect the present invention consists in a method of **flashing a roof** with a flashing as herein before described, wherein the ridge overlying region is applied to an actual or phantom "ridge" to be flashed,

first and second flanking regions extending from said ridge overlying region are located to lie upon and conform to roofing material(s) either side of
10 said ridge to form with said roofing material(s) a continuous weathering surface.

Preferably each of the flanking regions has at least a partial underlying support of the weathering material(s).

Preferably at least one of the flanking regions is at least conformed to a three dimensional form, and is conformable to a retained or retainable three
15 dimensional form or has a distal extremity greater in extent than the proximal extent of that flanking region to said ridge overlying region.

Preferably the roof flashing includes preferably by removal of a release sheet or release sheets to reveal an adhesive or other tack providing surface to allow at least part of at least one of the flanking regions to be adhesively attached
20 to a support surface e.g. of a roofing material(s) to be flashed.

Preferably some options one or more materials e.g. as a laminate, provide the ridge overlying region whilst in other forms the ridge overlying region can be at least in part, primarily or wholly of the one or more material(s) providing a weathering surface notwithstanding the fact that the flashing is at least in part
25 laminated (e.g. whether solely in one or both of the flanking regions or otherwise).

Preferably said three dimensional region is at least in part held in its three dimensional form by said partial underlying support.

Preferably said three dimensionally conformed material is a metal.

30 Preferably said three dimensional region is configured so as to exhibit a

substantially sinusoidal section when being viewed in section towards said distal ends.

Preferably said ridge overlying region includes a number of openings therethrough to allow penetrative fixers to affix the same to a "ridge" beam or
5 beams.

Preferably said flashing is to underlie a ridge cap or ridge tile.

Preferably said flashing may form the ridgeline without reliance upon a ridge cap or ridge tile.

Preferably said flashing is coloured to match the roofing material or tiles
10 to which it is applied.

Preferably said flashing may be coloured in a form as desired by the end user.

In another aspect the present invention consists in a **flashing** as herein described when of a form and/or structure substantially as hereinbefore described
15 with reference to any one or more of the accompany drawings.

In a further aspect the present invention consists in the **use or methods of use** of a flashing or flashing structure of any of the kinds as herein described.

In yet another aspect the present invention consists in a **structure** flashed by a flashing or flashing structure of any one of claims as herein described.

20 As used herein the term "ridgeline" refers to a line in a roof (such as at the apex or valley of a ridge) whether defined by a join or any region that requires a flashing or sealing, whether that line, whether phantom or actual, is linear, curvilinear or otherwise.

As used herein the term "ridge" has the corresponding meaning to provide
25 itself or with the flashing of the invention an appropriate ridgeline.

As used herein the term "phantom" in respect of a ridge refers to a region that might accommodate an actual ridge but instead can be flashed without the flashing covering an underlying ridge defining member thereby to provide the appearance of a transition substantially in a form of a ridge irrespective of
30 whether or not there is actually a ridge formed or present.

As used herein at least one weathering material includes preferably a single material providing a continuous weathering surface but may include some fabrication of that single material or several materials alongside one another but with some overlapping or some overlying of one material on another etc.

5 As used herein the term "(s)" following a noun means the plural and/or singular form of that noun.

As used herein the term "and/or" means "and" or "or", or where the context allows both.

As used herein the term "weathering layer" includes any single material or
10 multiple materials, whether laminated, mixed or otherwise, to provide a layer (not necessarily planar nor of constant thickness) of which an outer surface is to act as the weathering surface and another surface of which can act as a surface to be bonded by said adhesive matrix to said conformable layer.

As used herein the term "conformable yet shape retaining layer" includes
15 metal (eg; aluminium) expanded sheet into a perforate "mesh-like" form but is not confined thereto. It can include perforated or non perforated metal (eg; lead or aluminium) or other sheeting (eg; steel wire mesh or zinc) and irrespective, if perforate, whether sheet-wise expandable or not.

To those skilled in the art to which the invention relates, many changes in
20 construction and widely differing embodiments and applications of the invention will suggest themselves without departing from the scope of the invention as defined in the appended claims. The disclosures and the descriptions herein are purely illustrative and are not intended to be in any sense limiting.

25 **BRIEF DESCRIPTION OF THE DRAWINGS**

Preferred embodiments of the present invention will now be described with reference to the accompanying drawings.

Figure 1 shows a wire frame isometric view of one embodiment of the present invention where it is used to flash over a ridge beam or beams and sit
30 under a ridge capping and then to lie on the roofing materials,

Figure 2 is a solid drawing similar to that of Figure 1,

Figure 3 is a bottom view of the embodiment of Figure 1,

Figure 4 is a side view of the embodiment of Figure 1,

5 **Figure 5** is a solid view of a further embodiment of the present invention wherein the flashing lies on or above the ridge beam or beams and then goes on to flash the roofing materials; in this particular embodiment a ridge capping or ridge tile is not necessarily required.

Figure 6 is an isometric wire view of that of Figure 5,

Figure 7 is a bottom view of the embodiment of Figure 5,

10 **Figure 8** is a side view of the embodiment of Figure 5,

Figure 9 is an isometric view of the one of the flashing flaps or flanking region of the embodiment of Figure 5,

Figure 10 is an isometric wire view of that of Figure 9,

Figure 11 is a plan view of Figure 10,

15 **Figure 12** is a side view of Figure 10,

Figure 13 shows a first embodiment applied to a ridge beam and roofing materials with a ridge cap or ridge tile overlying the flashing,

Figure 14 is a further embodiment of that shown in Figure 1 whereby the ridge overlying region does not necessarily contour to the ridge beam or beams
20 but moves immediately from the upper surface of the ridge beam or beams out to the roofing material and thence drapes or flashes the roofing material, this flashing being adapted to underlie a ridge tile or ridge cap,

Figure 15 is a view similar to that of Figure 2 showing the flank returns at the distal end of the three dimensional region,

25 **Figure 16** is a cross section of one form of the flashed structure requiring a capping tile over the top of the flashing, and

Figure 17 is a view of a further embodiment of a flashing which does not require a capping tile but rather forms the ridgeline of its own accord.

30 **DETAILED DESCRIPTION OF THE INVENTION**

With reference to Figures 1 through 4 for there is shown a first embodiment of the flashing 1 to flash a ridge, in particular a ridge beam 2. The ridge overlying region 3 consisting of the vertical components and horizontal components as shown overlies the ridge beam 2 and substantially conforms to it.

5 The ridge overlying region is further conformed to the beam by an underlying support structure 4 which is made of a preformed material such as, but not limited to, ABS plastic and is part of the lamination or bonded to the lamination of the flashing to conform the flashing to a desired shape. Such supports may be of varying sizes and mentions to suite whatever form of ridge beam the flashing

10 is to be applied to. Either side of the ridge overlying region are a first flanking region 5 and a second flanking region 6 which articulate from first zone of articulation 7 from said ridge overlying region. The first and second flanking regions then extend outwards from the zone of articulation to the distal ends 8. The distal ends are further configured into a three dimensional region 9 which

15 can then be conformed to the roofing tile or roofing materials 10. The distal edge 8 of the flanking region 6 extends past the roofing material edge 12 forming an overlap between the two.

Shown on the first flanking region 5 at its distal end 8 is the perforate or expanded metal sheeting (for example of aluminium), the dimensionally

20 conformed material 13 being only partially expanded prior to its application to roofing or tile materials 10. A further material of the lamination, being a tack retaining adhesive 14, lies either over (in which case show through of the adhesive occurs through the dimensionally conformed material) or under the dimensionally conformed material to adhere the distal end of the flashing and

25 further part of the flashing to the roofing or tile materials 10.

The flashing 1 has as a nature of its construction (for example, but not limited to, by moulding or extrusion) the distal end 8 being of greater length in plan form than the proximal end at the zone of articulation 7 and thus forms the three dimensional region 9. In a preferred embodiment of the invention the three

30 dimensional region 9 is of a sinusoidal or wave form.

Through the ridge overlying region 3 there are available apertures 15 which allow the flashing to be nailed, or fastened to the underlying ridge defining member 2. The flashing 1 is of a natural rubber or synthetic rubber or plastics material such as the Desmopan® range of thermoplastic polyurethanes, which
5 extends from the distal end 8 of one flanking region to the distal end 8 of the other flanking region. This formation forms a continuous weathering surface which provides a water and weatherproof flashing to that structure which it is applied to.

In an alternative embodiment of that shown in Figures 1 through 4 is that
10 flashing shown in Figure 14 which rather than having a pronounced ridge overlying region which conforms to a ridge beam 2 the flashing has only a minimal ridge overlying region 3 and instead the zone of articulation 7 depends almost immediately from the upper region of the ridge overlying region 3. Though this is one example, the depending of the first and second flanking
15 regions may be at any particular vertical location off the ridge overlying region 3.

In this embodiment the flanking regions 5 and 6 run out to the roofing or tile materials 10 to be flashed and the three dimensional region 9 of the distal end 8 then may fold through a further zone of articulation 16 onto the roofing or tile materials to be flashed 10. In a similar way to that embodiment shown in Figures
20 1 through 4 the three dimensional region is formed by the distal ends 8 of the flanking regions being greater in length and plan form than that of the regions at or near the zones of articulation 7. Apertures (not shown) may also exist for the nailing or fastening of the flashing to a ridge defining member. Ridge tiles or caps may then be applied to finish the flashed structure.

25 With reference to Figure 5 through 12 there is shown a further embodiment of the present invention which constitutes a ridge overlying region 3 which will overly a ridge beam or other ridge forming or defining structure and has on either side of the ridge overlying region a first flanking region 5 and 6. In this particular embodiment the ridge overlying region is of a wider extent than
30 the embodiment shown in Figures 1 through 4. However the principle feature of

the flanking regions having a distal three dimensionally deformed region to adhere to roofing material or tiles is still present. The roof overlying region 3 in this particular embodiment is formed from a substantially rigid material (such as but not limited to metal, plastic or otherwise) with a coating of material forming the weathering layer which is continuous with the weathering layer being part of the flanking regions. The flanking regions may be seam locked by crimping of the ridge overlying region to the laminate of the flanking regions or be bonded or melted or welded or adhered or otherwise to form the continuous weathering layer. Again the three dimensional region is supported by a dimensionally conformed material and adhesive though not shown in these figures. This particular embodiment may underlie a ridge capping tile or may of its own right form the ridgeline due to the rigid nature of the ridge overlying region and the weather ability of the weathering material (such as a thermoplastic polyurethane).

Shown in Figure 13 is the result of a flashing of Figure 14 or Figures 1 through 4 applied to a roof with the ridge tile or cap 11 overlying the flashing and the flashing 1 and its distal end 8 three dimensional region 9 conformed to the undulations of the roofing material or tiles 10. Thus is formed a weather tight and waterproof seal at the apex or vertice of the roof. Shown in Figure 15 is a flashing of the form of Figures 1 through 4 with the addition of flanking returns 17 which have been upturned to engage with the ridge tile or cap 11 as shown in Figure 16. Also are shown fastening 18 through the apertures 15 of the flashing into the ridge beam or member 2. The flanking region 17 initially lie in the curve or undulations of the three dimensional region 9 prior to its application whereupon lines of separation 19 allow them to be bent up towards the capping tile 11. A further extension of the dimensionally conformed material 13 and/or further adhesive 14 may be evident in these flanking returns to aid engagement with the capping or roofing tile 11.

Shown in Figure 17 is a flashing 1 which does not require a ridge tile or cap and is further contoured to give an aesthetically pleasing line to the roof such as would appear were overlapping ridge tiles or caps to be used as known in the

art. Furthermore the flashing of any of the embodiments may be colour matched to the roofing material that is chosen or may be coloured as per the desire of the user.